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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/887,889

06/22/2001

Yellapu Anjan

MPI-68

7997

7590

01/30/2003

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EXAMINER

KIANNI, KAVEH C

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,889

Applicant(s)

ANJAN, YELLAPU

Examiner

Kevin C Kianni

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 19 and 20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's (Mr. Lenkszus) election with traverse of claims 1-20 in telephone conversation 1/17/03 is acknowledged. Applicant chose group 1, consisting of claims 1-17 to be examined.
2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1 and 15 are drawn to a method of manufacturing of a coupler classified in class 385/143.
 - II. Claim 18, drawn to manufacturing of a coupler over a substrate classes 385/129.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions Group I claims and Group II claims are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case Group II invention can be made/used in integrated circuit optical switching network rather than fiber-optic coupling device.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Mr. Lenkszus on 1-17-03 a provisional election was made without traverse to prosecute the invention of I, claims 1-18.

Affirmation of this election must be made by applicant in replying to this Office action.

Claims 19-20 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Drawings

7. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the [1] must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dahlgren (US 5078465)

Regarding claim 1, Dahlgren teaches a method of manufacturing an optical coupler (shown at least in fig. 1; see abstract), comprising: orienting a polarization maintaining first optical fiber to a first predetermined orientation (see fig. 1, item 1 and col. 2, lines 42-60); orienting a polarization maintaining second optical fiber to said first predetermined orientation (see fig. 1, item 2 and col. 2, lines 42-60); placing a first portion of said first and second optical fibers in a side-by-side relationship (shown in fig. 1, items 1 and 2); fusing said first portion of said first and second optical fibers with heat from a heat source to produce a fused portion (see abstract and col. 2, lines 47-52); tapering said fused portion to produce a predetermined taper over said fused portion (see col. 2, lines 50-57). Dahlgren further teaches using heat source to heat a predetermined fixed distance during said fusing and tapering steps (shown in fig. 1, items 1 and 2 regions to be fused and col. 2, lines 42-57). However, Dahlgren does not specifically teach wherein the fusion is carried out by moving said heat source repeatedly over the fixed distance. It is obvious/well known to those of ordinary skill in the art when the invention was made that heating a fixed region of a bare fiber for fusion and tapering process requires heat to be repeatedly applied to that region in which this invention process includes since such fusion process improves fused fiber coupler by

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providing stable optical splitting ratio and low polarization cross-coupling (col. 1, lines 46).

Regarding claim 2, Dahlgren further teaches where said first polarization maintaining fiber is PANDA fiber; and said second polarization maintaining fiber is PANDA fiber (see col. 7, lines 27-31).

Regarding claim 3, Dahlgren further teaches where said first and second optical fibers each have first and second polarization modes corresponding to first and second orthogonal principal axes; and wherein said first predetermined orientation comprises one of said first or second polarization modes (see fig. 1, items 1-2 and col. 1, lines 16-31).

Regarding claims 9-14, Dahlgren further teaches where each of said first and second optical fibers comprises a jacket (see fig. 1, item jacket(s)); removing said first optical fiber jacket in a region corresponding to said first portion and removing said second optical fiber jacket in a region corresponding to said first portion bonding said first optical fiber jacket to said second optical fiber jacket adjacent each end of said first portion, tapering said first optical fiber jacket adjacent each end of said first portion to produce first and second tapered portions tapering said second optical fiber jacket adjacent each end of said first portion to produce first and second tapered portions bonding said first optical fiber first tapered portion to said second optical fiber first

portion; and bonding said first optical fiber second tapered portion to said second optical fiber second tapered portion (shown at least in fig. 1; see also col. 1, line 40-col. 2, line 3); selecting PANDA fiber for said first and second optical fibers (see col. 7, line 29).

10. Claims 4-8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahlgren and Chen (US 6031948).

Regarding claims 4-8, Dahlgren teaches all limitations of claim 1.

Dahlgren further teaches where each of said orienting steps comprises illuminating a respective one fiber of said first or second optical fibers with heating source and rotating said respective one fiber around its respective longitudinal axis (shown in at least figures 5-6; see also col. 1, lines 5-15 and col. 6, lines 13-36; wherein fibers are rotated/worked/twisted while heating the fusion region see also this well known process in US 4948217 provided herein as prior art) and forming the fusion over a rod (fig. 3, item 20) and encapsulating the fibers in a housing (shown in fig. 5G) disposing a dielectric gel on said first and second optical fibers and said a rod/block proximate each end of said fused portion (see col. 4, lines 27-41).

However, Dahlgren does not specifically teach wherein the above heating is implemented using a laser source and monitoring the interference pattern produced in said respective one fiber; and ceasing said rotating when said interference pattern corresponds to a predetermined pattern; supporting said first and second optical fibers on a substrate which fused silica and encapsulating it. These limitations are taught by Chen. Chen teaches optical coupler manufacturing (shown at least in fig. 1) that

includes the above limitations (see fig. 9, item encapsulated coupler(s); see col. 5, lines 1-10 and line 62-col. 6, line 21; also see fused silica fiber/substrate col. 3, lines 39-46). Thus, Chen provides fused fibers with desired channel spacing, passbands and refractive indexes (col. 2, lines 13-29). Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to modify Dahlgren's method of fusion process (i.e., figures 1 and 5-6) by including Chen's process of using laser light for heating and monitoring the interference pattern for desired level in order to produce a coupler that includes the above limitations, since such fusion process improves fused fiber coupler by providing stable optical splitting ratio and low polarization cross-coupling (col. 1, lines 46).

11. Claims 15-18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dahlgren and Lightstone et al. (US 4449781).

Regarding claim 15, Dahlgren teaches a method of manufacturing an optical coupler from first and second optical fibers each comprising an optical fiber and a jacket (shown at least in fig. 1; see abstract), said method comprising: removing said first optical fiber jacket around a first portion of said first optical fiber and said second optical fiber jacket around a first portion of said second optical fiber (see fig. 1, items 1-2 and col. 1, lines 47-50); tapering said first optical fiber jacket adjacent to each end of said first optical fiber first portion to produce first and second tapered jacket portions; tapering said second optical fiber jacket adjacent to each end of said second optical fiber first portion to produce first and second tapered jacket portions (see col. 1, lines

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460 and col. 7, lines 1-26); wherein cladding/jacket is a part of fused portion); placing said first portions of said first and second optical fibers in a side-by-side relation ship; bonding said first jacket first tapered portion to said second jacket first tapered portion and said first jacket second tapered portion to said second jacket tapered portion and fusing said first portions of said first and second optical fibers with heat from a heat source to produce a fused portion; and tapering said fused portion to produce a predetermined taper over said fused portion (see col. 1, lines 460 and col. 7, lines 1-26; wherein cladding/jacket is a part of fused portion; see also partial jacket/cladding fusion in US 4948217 provided herein as prior art).

However, Dahlgren does not specifically teach wherein the above removing comprises a portion of jacket. This limitation is taught by lightstone (see abstract). Thus, lightstone high optical coupling with low loss (col. 1, lines 7-9). Thus, it would have been obvious to a person of ordinary skill in the art when the invention was made to modify Dahlgren's method of fusion process (i.e., figures 1 and 5-6) by including Lightstone's process of partially removing the fiber jacket in order to produce a coupler that includes the above limitations, since such fusion process improves fused fiber coupler by providing stable optical splitting ratio and low polarization cross-coupling (col. 1, lines 46).

Regarding claims 16-18, the arguments presented in rejection of claims 1-2, above, is analogous in rejection of claims 16-18.

Citation of Relevant Prior Art

6. Prior art made of record and not relied upon is considered pertinent to applicant's disclosure. In accordance with MPEP 707.05 the following references are pertinent in rejection of this application since they provide substantially the same information disclosure as this patent does. These references are:

Pan et al. 6198858

Keck et al. 4948217

Arima et al. 5420949

Phillips et al. 5835199

These references are cited herein to show the relevance of the apparatus/methods taught within this reference as prior art.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaveh Cyrus Kianni whose telephone number is (703) 308-1216.

The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 6:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font, can be reached at (703) 308-4881.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 308-9051, (for formal communications intended for entry)

or:

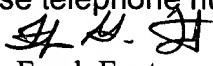
(703) 308-5397, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

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Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4770.

Kevin Cyrus Kianni
Patent Examiner
Group Art Unit 2877


Frank Font
Supervisory Patent Examiner
Group Art Unit 2877

January 17, 2003